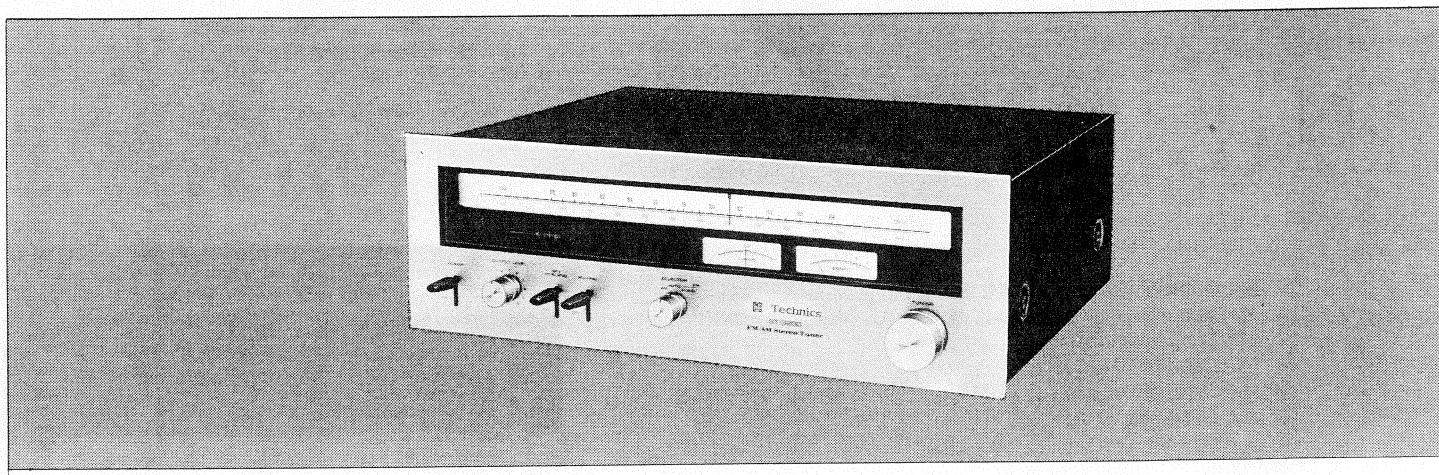
ORDER NO. AD7404-072

Service Manual

Technics
HI-FI COMPONENTS
Technics



FM/AM Stereo Tuner MODEL ST-3200

TECHNICAL SPECIFICATIONS (IHF)

FM TUNER SECTION

Frequency range:		88~108MHz
Antenna terminals:		300Ω (balanced) 75Ω (unbalanced)
Sensitivity:		1.8μV
Total harmonic distortion (400Hz, 100% modulation):		
	MONO	0.2%
	STEREO	0.4%
S/N:		75dB
Frequency response:	20Hz~15kHz	$^{+0.2}_{-0.8}$dB
Alternate channel selectivity:		65dB
Capture ratio:		1.0dB
Image rejection (at 98MHz):		75dB
IF rejection (at 98MHz):		85dB
Spurious response rejection (at 98MHz):		90dB
AM suppression:		55dB
Stereo separation:	45dB at 1kHz	35dB at 10kHz
Leak carrier (19kHz, 38kHz):		60dB

AM TUNER SECTION

Frequency range:		520~1610kHz
Sensitivity:		20μV
Selectivity:		30dB
Image rejection (at 1000kHz):		45dB
IF rejection (at 1000kHz):		40dB

GENERAL

Output voltage:	VARIABLE	0~1.5V
	FIXED	0.5V
Power supply:	50/60Hz	110/120/220/240V
Power consumption:		16W
Dimensions (W×H×D):		410×140×360mm (16⅛"×5½"×14⅛")
Weight:		6.9kg (15.2 lb)

TECHNISCHE DATEN (DIN 45 500)

UKW TUNERTEIL

Empfangsbereich:			88~108MHz
Antennenanschluss:			300Ω (symmetrisch) 75Ω (asymmetrisch)
Empfindlichkeit:	1.8μV, 30dB Fremdspannungsabstand		300Ω
	1.2μV, 20dB Fremdspannungsabstand		300Ω
	1.0μV, 30dB Fremdspannungsabstand		75Ω
	0.6μV, 20dB Fremdspannungsabstand		75Ω
Frendspannungsabstand:	MONO		75dB
	STEREO		60dB
Frequenzgang:		20Hz~15kHz	$^{+0.2}_{-0.8}$dB
Selektivität			65dB
Gleichwellen-Selektion:			1.0dB
Harmonische Verzerrung:	MONO		0.2%
	STEREO		0.4%
Spiegelselektion bei 98MHz:			75dB
ZF-Festigkeit bei 98MHz:			85dB
Unselektivitätsfestigkeit bei 98MHz:			90dB
AM-Unterdrückung:			55dB
Stereo-Übersprechdämpfung:		45dB bei 1kHz	35dB bei 10kHz
Trägerrest:			60dB
Begrenzung, Einsatzpunkt:			1.0μV
Bandbreite:	ZF-Verstärker		400kHz
	UKW-Demodulator		800kHz

MW TUNERTEIL

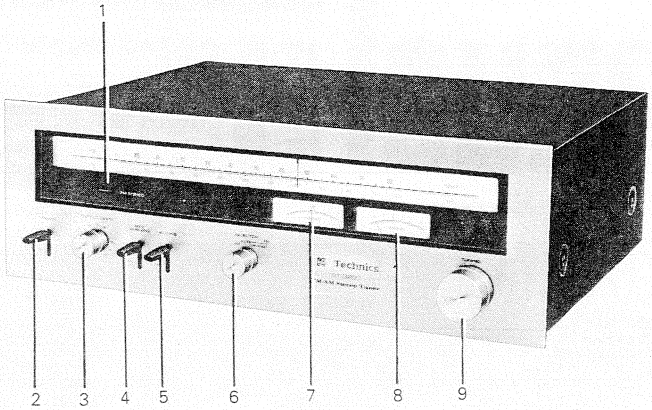
Empfangsbereich:	520~1610kHz
Empfindlichkeit:	20μV
Selektivität:	30dB
Spiegelselektion:	45dB
ZF-Festigkeit:	40dB

ALLGEMEINE DATEN

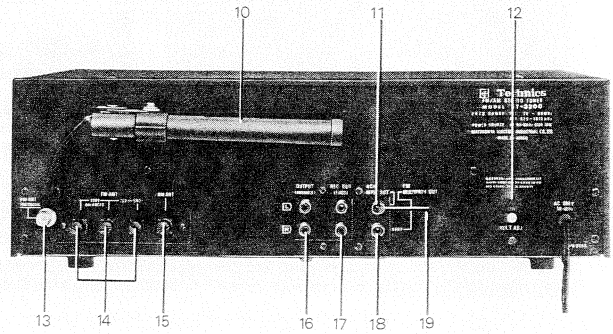
Ausgangsspannung:	Fest	0.5V
	Veriabel	0—1.5V
Leistungsaufnahme:		16W
Netzspannung umschaltbar:		110/120/220/240V
Abmessungen (B·H·T):		410×140×360mm
Gewicht:		6.9kg

MATSUSHITA ELECTRIC
MATSUSHITA ELECTRIC TRADING CO., LTD.
P. O. Box 288, Central Osaka, Japan

■ LOCATION OF CONTROLS

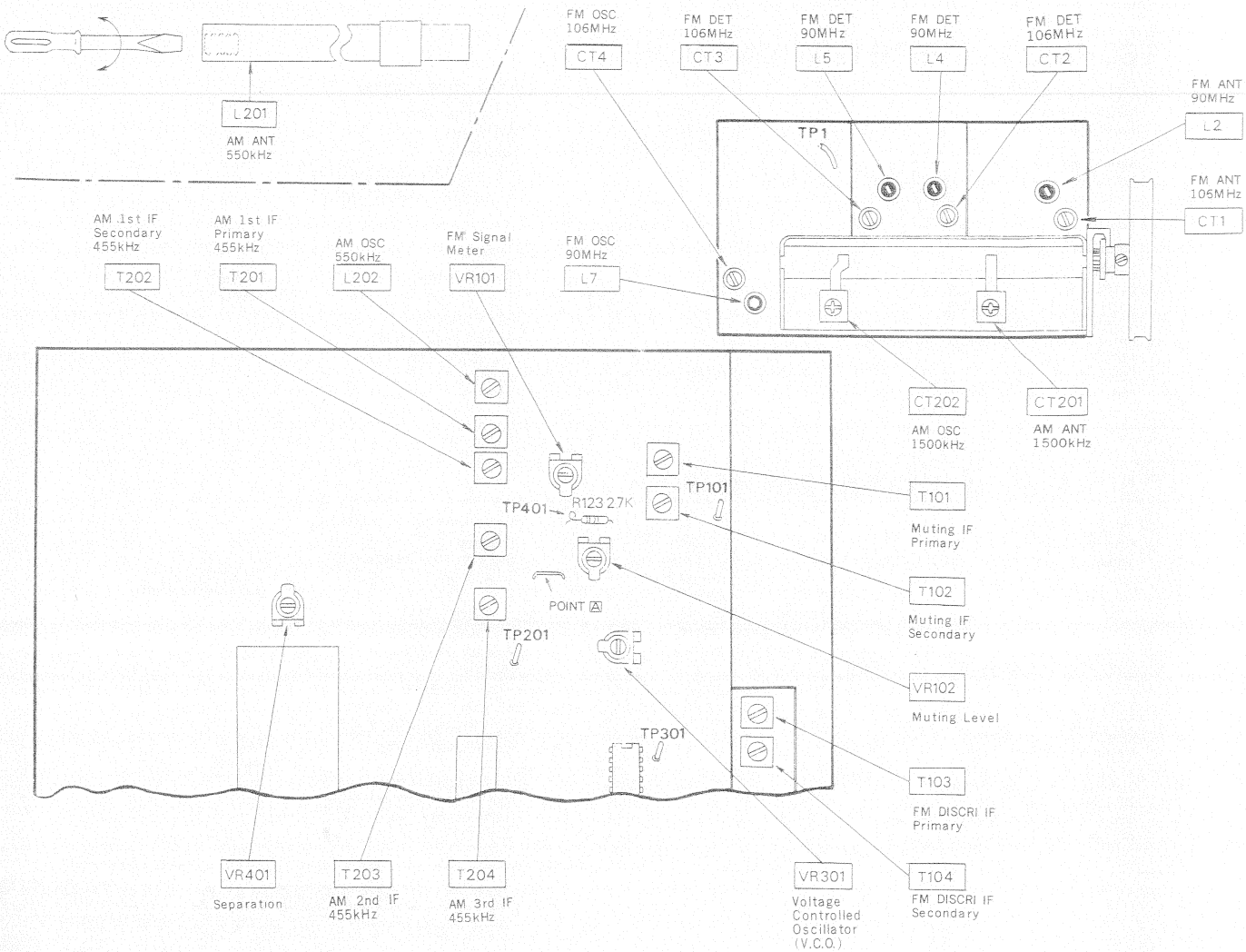


1. FM STEREO INDICATOR
2. POWER SOURCE SWITCH [S4]
3. OUTPUT LEVEL CONTROL
4. MPX HI-BLEND SWITCH [S3]
5. MUTING SWITCH [S2]
6. BAND SELECTOR SWITCH [S1]
7. FM TUNING METER
8. SIGNAL STRENGTH METER
9. TUNING CONTROL



10. AM FERRITE CORE ANTENNA
11. 4CH MPX OUTPUT TERMINAL
12. VOLTAGE SELECTOR SWITCH [S5]
13. 75Ω COAXIAL FM ANTENNA SOCKET
14. FM ANTENNA TERMINALS
15. AM ANTENNA TERMINAL
16. OUTPUT TERMINALS ..... Variable
17. RECORDING OUTPUT TERMJNALS ..... Fixed
18. FM MULTIPATH OUTPUT TERMINAL ..... Vertical
19. FM MULTIPATH OUTPUT TERMINAL ..... Horizontal

■ ALIGNMENT POINTS



ALIGNMENT INSTRUCTIONS ..... READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Notes :
1. Output level control ..... Maximum (AM-RF, FM-RF) Minimum (AM-IF, FM-IF)
2. Muting switch ..... OFF
3. MPX high blend switch ..... OFF
4. Band selector switch ..... AM, FM AUTO (FM-RF, FM-IF)
5. Maintain line voltage at rated voltage.
6. Output of signal generator should be no higher than necessary to obtain an output reading.

	SIGNAL GENERATOR or SWEEP GENERATOR		DIAL SETTING	INDICATOR (VTVM or SCOPE) (DISTORTION METER)	ADJUSTMENT POINTS	REMARKS
	CONNECTION	FREQUENCY	[DISTANCE]			
	AM ALIGNMENT					
1	High side through 0.001μF to antenna terminal. Common to chassis.	455kHz	Point of non-inter-ference	Connect vertical amplifier of scope to **TP201.**	T201 (1st IFT) (P) T202 (1st IFT) (S) T203 (2nd IFT) T204 (3rd IFT)	Adjust for maximum output.
2	Fashion loop of several turns of wire and radiate signal into loop of tuner.	550kHz (30% Mod. with 400Hz)	550kHz [8.1mm (5/16")]	Connect VTVM or scope to output terminal of set.	L202 (OSC Coil) L201 (ANT Coil)	Adjust for maximum output. Adjust ferrite core of L201 by screw driver.
3	Fashion loop of several turns of wire and radiate signal into loop of tuner.	1500kHz (30% Mod. with 400Hz)	1500kHz [191.4mm (7 17/32")]	Connect VTVM or scope to output terminal of set.	CT202 (OSC Trimmer) CT201 (ANT Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
	FM-IF ALIGNMENT					
4		No Signal	Point of non-inter-ference	Connect vertical amplifier of scope to output terminal of set.	T103 (DISCRI IFT) (P)	Adjust for maximum noise level.
5		No Signal	Point of non-inter-ference	Connect vertical amplifier of scope to output terminal of set.	T104 (DISCRI IFT) (S)	Adjust for center of tuning meter indication.
	FM-RF ALIGNMENT					
6	Connect to FM antenna terminal through FM dummy antenna. Refer to fig. 1	90MHz (100% Mod. with 400Hz)	90MHz [27.1mm (1 1/16")]	Connect VTVM or scope to output terminal of set.	L7 (OSC Coil) L5 (DET Coil) (S) L4 (DET Coil) (P) L2 (ANT Coil)	Adjust for maximun output.
7	Connect to FM antenna terminal through FM dummy antenna. Refer to fig. 1	106MHz (100% Mod. with 400Hz)	106MHz [181.7mm (7 5/32")]	Connect VTVM or scope to output terminal of set.	CT4 (OSC Trimmer) CT3 (DET Trimmer) CT2 (DET Trimmer) CT1 (ANT Trimmer)	Adjust for maximum output. Repeat steps (6) and (7).
	FM MONO DISTORTION ALIGNMENT					
8	Connect to FM antenna terminal through FM dummy antenna. Refer to fig. 1	98MHz (100% Mod. with 400Hz)	98MHz	Connect distortion meter to output terminal of set.	T103 (DISCRI IFT) (P)	Adjust for minimum of distortion meter indication.
	SIGNAL METER ALIGNMENT					
9	Connect to FM antenna terminal through FM dummy antenna. Refer to fig. 2	98MHz (30% Mod. with 400Hz)	98MHz	Signal meter of set.	T101 (Muting IFT) (P)	Adjust for maximum of signal meter indication.
10				Connect DC VTVM to **TP401** (+) and **POINT** Ⓐ (−).	T102 (Muting IFT) (S)	Adjust for maximum of DC VTVM indication.
11	Output level of S.G. ..... 72dB (IHF)			Signal meter of set.	VR101	Adjust for 4.8~5 point of signal meter indication.
	MUTING LEVEL ALIGNMENT					
	Note : Muting switch to ON.					
12	Connect to FM antenna terminal through FM dummy antenna. Output level of S.G. ..... 28dB (IHF)	98MHz (100% Mod. with 400Hz)	98MHz	Connect VTVM or scope to output terminal of set.	VR102	Adjust so that output can be obtained.

	FM MPX PILOT ALIGNMENT	
	When use the frequency counter	When not use the frequency counter
13	① 98MHz Non-modulation mono singal applied to set. ② Muting switch to ON. ③ Connect the frequency counter as shown fig. 4. ④ Adjust VR301 to 19kHz ±100Hz.	① Stereo signal applied to set or receive the stereo station. ② Adjust VR301 to lighting point of stereo indicator and sement contactor of VR301 as shown fig. 5.

STEREO SEPARATION ALIGNMENT

Note : 1. Stereo modulator ..... Connect stereo modulator output to EXT. MOD. terminal of signal generator.
Internal OSC ..... 1 kHz. Pilot signal modulation 10%
2. Signal generator ..... Frequency approximately 98MHz. Output level 72dB (IHF). Modulation mode to FM.
3. Band selector switch ..... FM AUTO

	SIGNAL GENERATOR CONNECTION	STEREO MODULATOR MODE and MOD. RATE	INDICATOR (VTVM or SCOPE)	ADJUSTMENT POINTS	REMARKS
14	FM antenna terminal through dummy antenna.	L (and R) 30% Modu-lation	Connect VTVM or scope to output terminals through low pass filter. Refer to fig. 3.	VR401	Adjust for minimum right (and left) output.

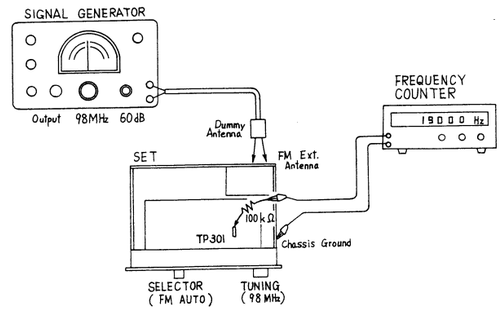
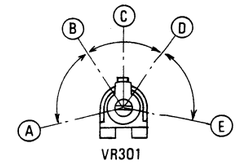
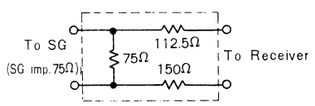


Fig. 4



A~B, D~E : Stereo OFF Position.
B~D : Stereo ON Position (Indicator Lighting)
C : Adjust Point of Pilot Circuit.

Fig. 5



300Ω FM Dummy Antenna

Fig. 1 (Abb. 1)

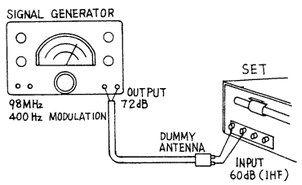


Fig. 2

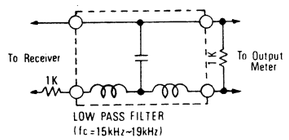


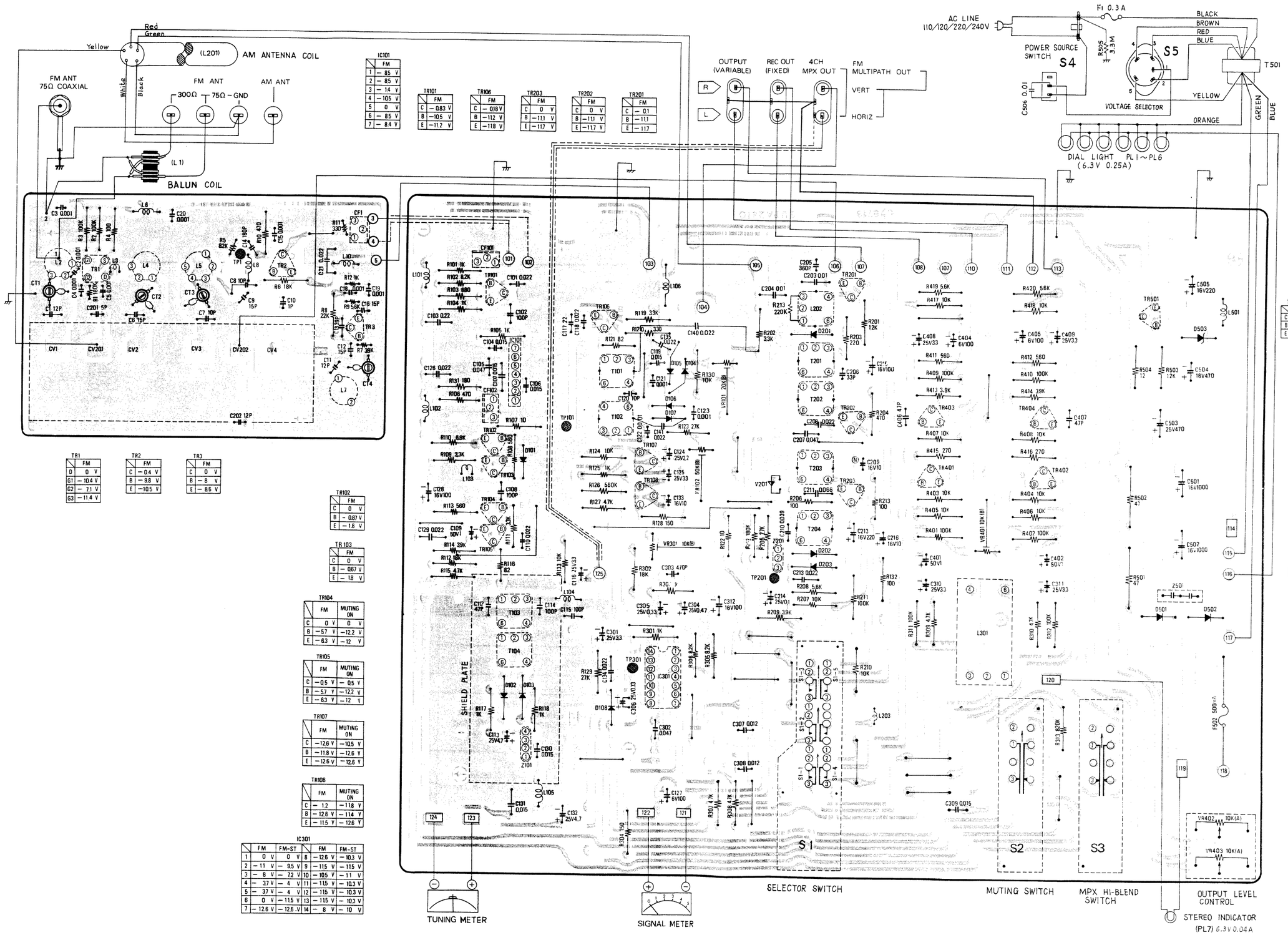
Fig. 3

■ FM-RF ALIGNMENT INSTRUCTIONS ..... Only set for Germany

ABGLEICHANWEISUNGEN..... VOR DEM ABGLEICH SORGFÄLTIG DURCHLESEN					
MESSENDER		SKALENZEIGER-EINSTELLUNG DES EMPFÄNGERS [ABSTAND]	ANGEIGE (RÖHRENVOLTMETER ODER OSZILLOGRAPH)	ABGLEICH	BEMERKUNGEN
SCHALTUNG	FREQUENZ				
FM HF-ABGLEICH					
Anschluß an den FM Antennenanschluß über die künstliche, FM Antenne. (Vgl. Abb. 1)	87.5MHz (100% Mod. bei 400Hz)	87.5MHz [0mm]	Output meter über Lautsprecher-schwingspule anschließen.	L7 (Oszillatorspule)	Auf max. Ausgang abgleichen.
〃	90MHz (〃)	90MHz	〃	L5 (Zwischenkreis) L4 (Zwischenkreis) L2 (Antennenspule)	〃
〃	106MHz (〃)	106MHz [181.7mm]	〃	CT4 (OSZ. Trimmer) CT3 (DET. Trimmer) CT2 (DET. Trimmer) CT1 (ANT. Trimmer)	〃

FM-RF Circuit Board

AM, FM-IF, MPX, MUTING, POWER SOURCE & AF AMP Circuit Board



IC101	FM
1	– 85 V
2	– 85 V
3	– 14 V
4	– 105 V
5	0 V
6	– 85 V
7	– 84 V

TR101	FM
C	– 0.83 V
B	– 105 V
E	– 11.2 V

TR106	FM
C	– 0.18 V
B	– 11.2 V
E	– 11.8 V

TR203	FM
C	0 V
B	– 11.1 V
E	– 11.7 V

TR202	FM
C	0 V
B	– 11.1 V
E	– 11.7 V

TR201	FM
C	– 0.1
B	– 11.1
E	– 11.7

TR501	FM—ST
C	– 21.7 V — 19.6 V
B	– 13.2 V — 13.2 V
E	– 12.6 V — 12.6 V

TR404	AF
C	– 7.2 V
B	– 1.1 V
E	– 11.6 V

TR403	AF
C	– 7.2 V
B	– 1.1 V
E	– 11.6 V

TR402	AF
C	– 1.1 V
B	– 1 V
E	– 0.5 V

TR401	AF
C	– 1.1 V
B	– 1 V
E	– 0.5 V

TR1	FM
D	0 V
G1	– 10.4 V
G2	– 7.1 V
G3	– 11.4 V

TR2	FM
C	– 0.4 V
B	– 9.8 V
E	– 10.5 V

TR3	FM
C	0 V
B	– 8 V
E	– 8.6 V

TR102	FM
C	0 V
B	– 0.87 V
E	– 1.8 V

TR103	FM
C	0 V
B	– 0.87 V
E	– 1.8 V

TR104	FM	MUTING ON
C	0 V	0 V
B	– 5.7 V	– 12.2 V
E	– 6.3 V	– 12 V

TR105	FM	MUTING ON
C	– 0.5 V	– 0.5 V
B	– 5.7 V	– 12.2 V
E	– 6.3 V	– 12 V

TR107	FM	MUTING ON
C	– 12.6 V	– 10.5 V
B	– 11.8 V	– 12.6 V
E	– 12.6 V	– 12.6 V

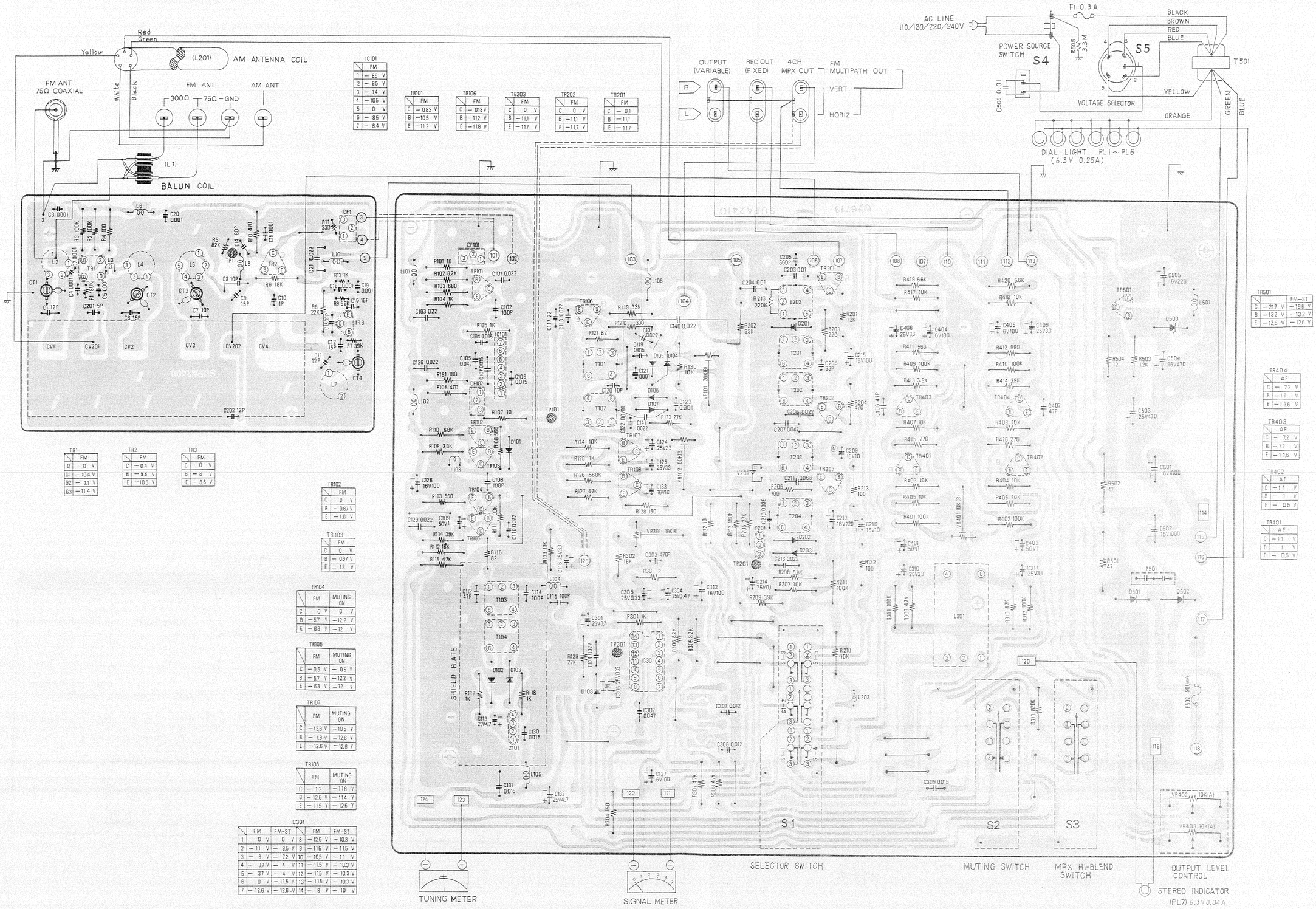
TR108	FM	MUTING ON
C	– 1.2	– 11.8 V
B	– 12.6 V	– 11.4 V
E	– 11.5 V	– 12.6 V

IC301

	FM	FM-ST		FM	FM-ST
1	0 V	0 V	8	– 12.6 V	– 10.3 V
2	– 11 V	– 9.5 V	9	– 11.5 V	– 11.5 V
3	– 8 V	– 7.2 V	10	– 10.5 V	– 11 V
4	– 3.7 V	– 4 V	11	– 11.5 V	– 10.3 V
5	– 3.7 V	– 4 V	12	– 11.5 V	– 10.3 V
6	0 V	– 11.5 V	13	– 11.5 V	– 10.3 V
7	– 12.6 V	– 12.8 V	14	– 8 V	– 10 V

FM-RF Circuit Board

AM, FM-IF, MPX, MUTING, POWER SOURCE & AF AMP Circuit Board



IC101	FM
1	8.5 V
2	8.5 V
3	1.4 V
4	10.5 V
5	0 V
6	8.5 V
7	8.4 V

TR101	FM
C	0.83 V
B	10.5 V
E	11.2 V

TR106	FM
C	0.18 V
B	11.2 V
E	11.8 V

TR203	FM
C	0 V
B	11.1 V
E	11.7 V

TR202	FM
C	0 V
B	11.1 V
E	11.7 V

TR201	FM
C	0.1
B	11.1
E	11.7

TR501	FM—ST
C	21.7 V — 19.6 V
B	13.2 V — 13.2 V
E	12.6 V — 12.6 V

TR404	AF
C	7.2 V
B	1.1 V
E	1.16 V

TR403	AF
C	7.2 V
B	1.1 V
E	1.16 V

TR402	AF
C	1.1 V
R	1 V
E	0.5 V

TR401	AF
C	1.1 V
B	1 V
E	0.5 V

TR1	FM
D	0 V
G1	10.4 V
G2	7.1 V
G3	11.4 V

TR2	FM
C	0.4 V
B	9.8 V
E	10.5 V

TR3	FM
C	0 V
B	8 V
E	8.6 V

TR102	FM
C	0 V
B	0.67 V
E	1.6 V

TR103	FM
C	0 V
B	0.67 V
E	1.8 V

TR104	FM	MUTING ON
C	0 V	0 V
B	5.7 V	12.2 V
E	8.3 V	12 V

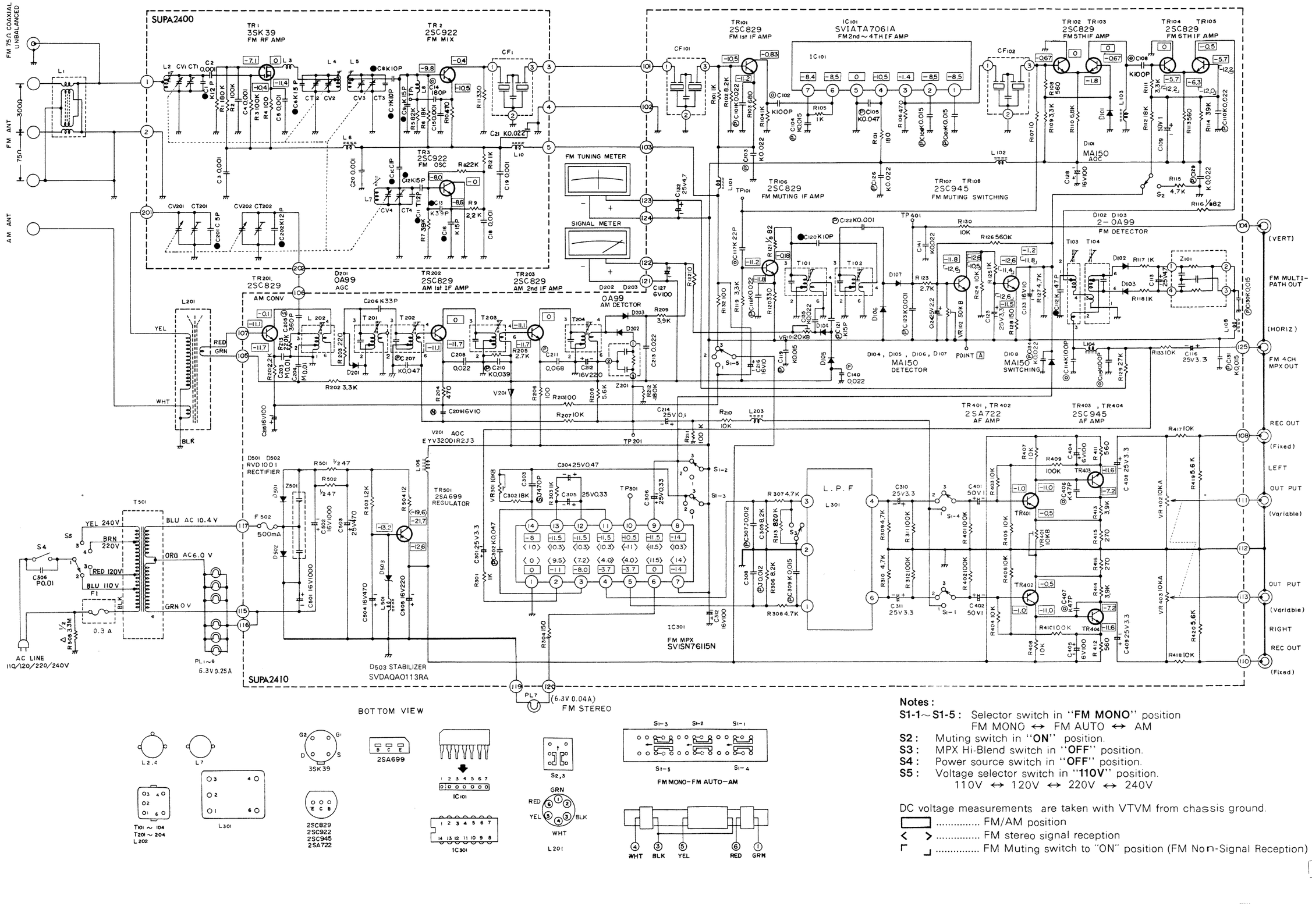
TR105	FM	MUTING ON
C	0.5 V	0.5 V
B	5.7 V	12.2 V
E	8.3 V	12 V

TR107	FM	MUTING ON
C	12.6 V	10.5 V
B	11.8 V	12.6 V
E	12.6 V	12.6 V

TR108	FM	MUTING ON
C	1.2	11.8 V
B	12.6 V	11.4 V
E	11.5 V	12.6 V

IC301	FM	FM-ST		FM	FM-ST
1	0 V	0 V	8	12.6 V	10.3 V
2	11 V	9.5 V	9	11.5 V	11.5 V
3	8 V	7.2 V	10	10.5 V	11 V
4	3.7 V	4 V	11	11.5 V	10.3 V
5	3.7 V	4 V	12	11.5 V	10.3 V
6	0 V	11.5 V	13	11.5 V	10.3 V
7	12.6 V	12.6 V	14	8 V	10 V

Schematic Diagram ..... Model ST-3200 (This schematic diagram may be modified at any time with the development of new technology.)



BOTTOM VIEW

Notes :

S1-1~S1-5 : Selector switch in "**FM MONO**" position
FM MONO ↔ FM AUTO ↔ AM

S2 : Muting switch in "**ON**" position.

S3 : MPX Hi-Blend switch in "**OFF**" position.

S4 : Power source switch in "**OFF**" position.

S5 : Voltage selector switch in "**110V**" position.
110V ↔ 120V ↔ 220V ↔ 240V

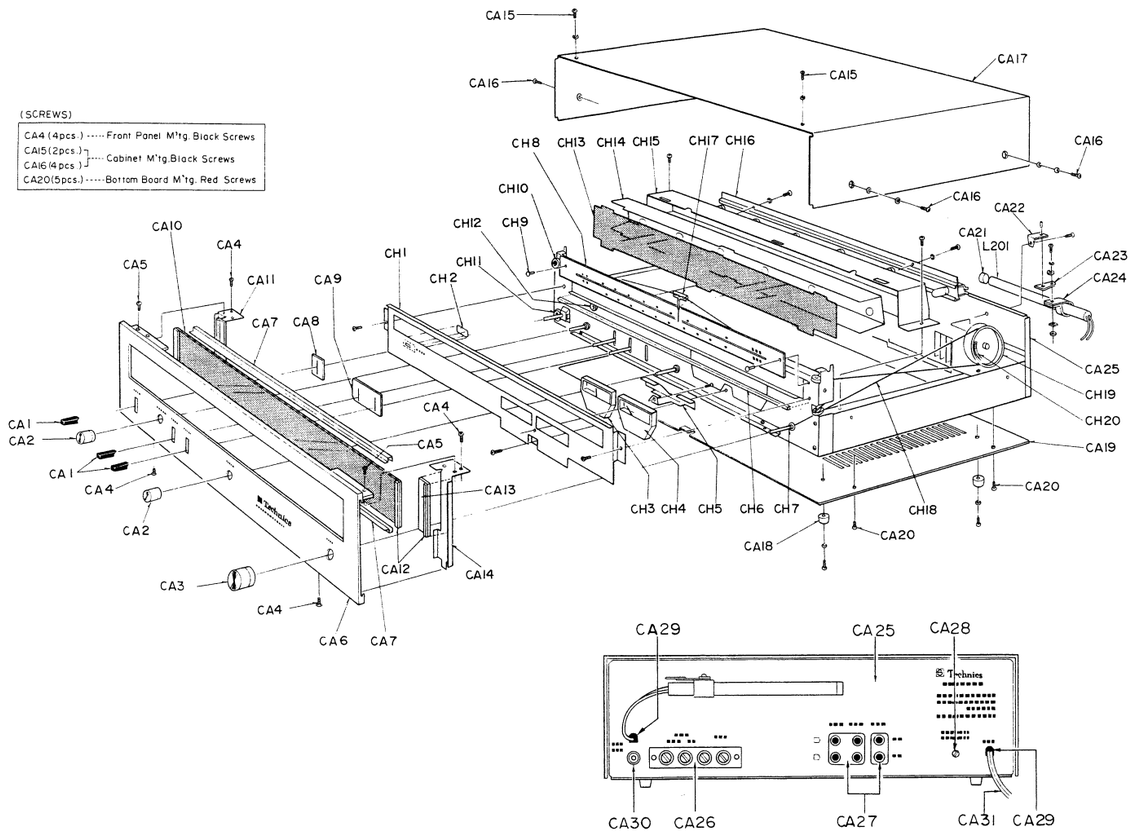
DC voltage measurements are taken with VTVM from chassis ground.

▭ ..... FM/AM position

< > ..... FM stereo signal reception

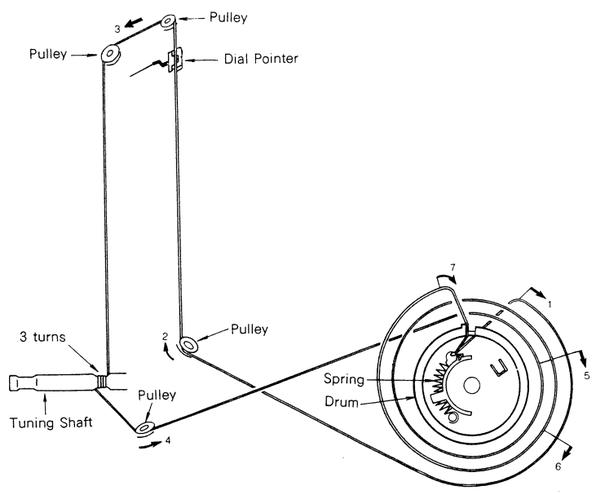
⌜ ⌟ ..... FM Muting switch to "ON" position (FM Non-Signal Reception)

■ CABINET & CHASSIS PARTS LOCATION

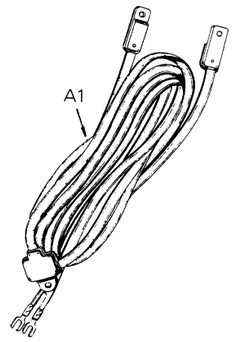


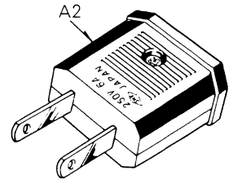
■ DIAL CORD INSTALLATION GUIDE

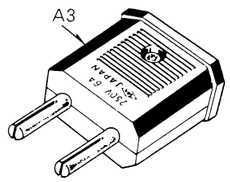
1. Dial cord length is 200cm (78 3/4")
2. Tuning gang is positioned at maximum capacity.
   (Frequency is minimum)
3. Arrow marks (1～7) indicate correct order and direction of stringing dial cord.

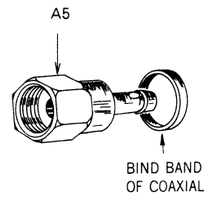


■ ACCESSORIES

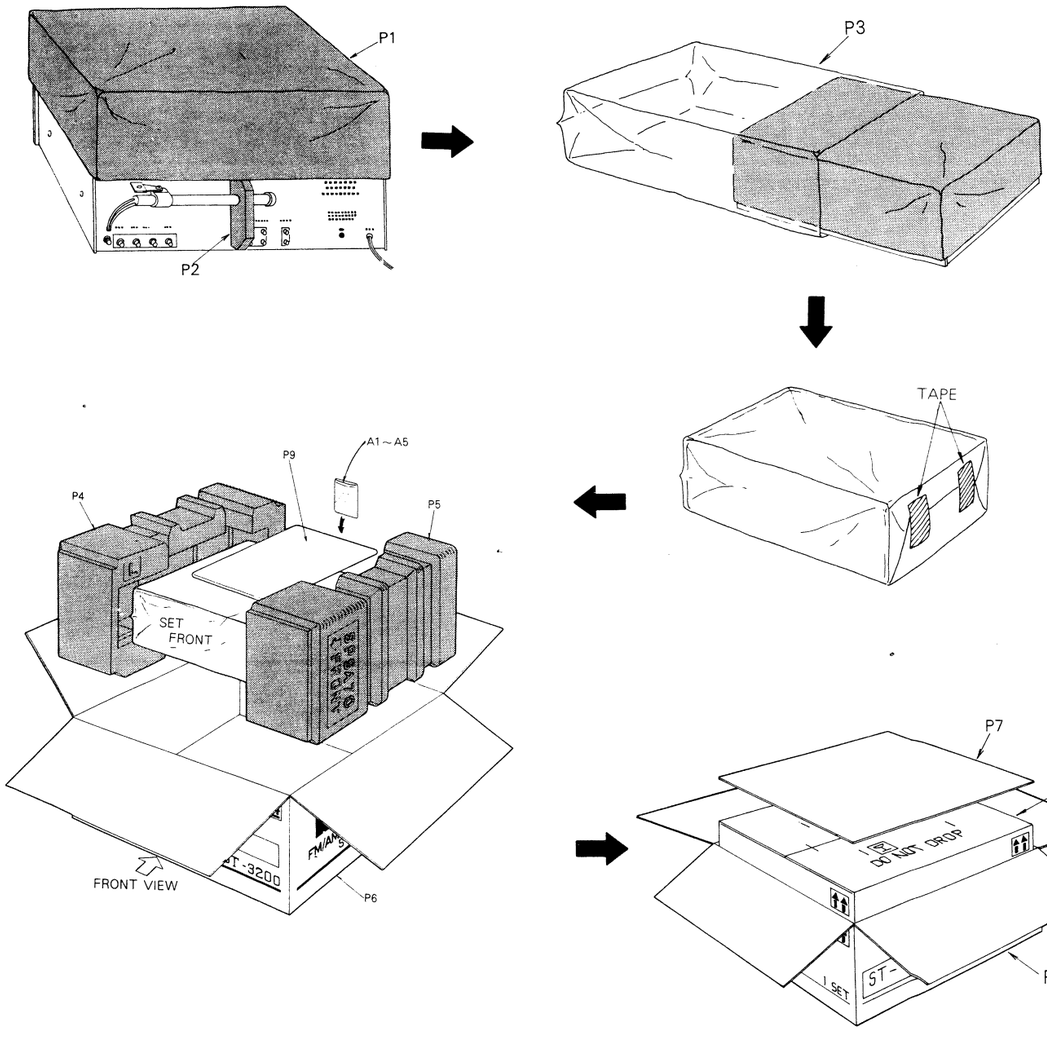








■ PACKINGS



■ REPLACEMENT PARTS LIST

NOTES :

1 Part numbers are indicated on most mechanical parts
Please use this part number, for parts orders

2 **X - Z** rank: **X** rank parts will cover 80% of repair needs
X + Y rank parts will cover 95% of repair needs
Z rank parts are less necessary

Bemerkungen :

1 Die meisten mechanischen Teile sind mit Teilnummern versehen.
Bitte geben Sie diese Nummern an, sofern die Teile keine Bezugsnummern haben.

2. Gruppen **X - Z** : Teile der Gruppe **X** machen 80% des Ersatzteilbedarfes aus.
Teile der Gruppen **X** und **Y** machen 95% des Ersatzteilbedarfes aus.
Teile der Gruppe **Z** werden seltener benötigt

Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
INTEGRATED CIRCUITS and TRANSISTORS				
IC101	SVIATA7061A	FM IF 2nd, 3rd & 4th Amplifier	1	X
IC301	SVISN76115N	FM MPX Circuit (Phase Locked Loop type detector)	1	○ X
TR1	3SK39Q	FM RF Amplifier [FET]	1	X
TR2, 3	2SC922M	FM MIX & OSC	2	X
TR101, 102, 103, 104, 105, 106, 201, 202, 203	2SC829C	FM IF 1st, 5th, 6th & Muting Amp. AM Converter, AM IF 1st & 2nd Amp.	9	X
TR107, 108 403, 404	2SC945Q1	FM Muting Switching & AF Amplifier	4	X
TR401, 402	2SA722T	AF Amplifier	2	X
TR501	2SA699SFR	Regulator	1	X
DIODES and VARIATITE				
D101, 104, 105, 106, 107, 108	MA150	AOC, Meter & Muting Detector	6	X
D102, 103	2-0A99	FM Detector	1pair	X
D201, 202, 203	0A99	AGC & AM Detector	3	X
D501, 502	RVD10D1	Rectifier	2	X
D503	SVDAQA0113RA	13V Zener, Voltage Stabilizer	1	○ X
V201	EYV320D1R2J3	AOC, Variatite	1	X
COILS and TRANSFORMERS				
L1	SLAA4W1-3	Balun Coil	1	X
L2	SLAA4N13	FM Antenna Coil	1	○ X
L3	RLQY15S5	RFC	1	X
L4	SLDA4N25	FM Detector Coil, Primary	1	○ X
L5	SLDA4N26	FM Detector Coil, Secondary	1	○ X
L6, 10, 101, 102, 105, 501	SLQX101-2D	Choke Coil	6	○ X
L7	SLOA4N14	FM Oscillator Coil	1	○ X
L8	RLQY15G5	RF Choke Coil	1	X
L103, 104, 106	SLQX151-1Y	RF Choke Coil	3	X
L201	SLFA2E17-1	AM Antenna Coil	1	○ X
L202	SLOA2C7	AM Oscillator Coil	1	○ X
L203	ELQ223D599G	Choke Coil	1	X
L301	SLMA1Z3-K	Low Pass Filter	1	○ X
T101, 102	SLIA4C241	Muting IF Transformer, (P) & (S)	2	○ X
T103	SLIA4C541	FM Discriminator IFT, Primary	1	○ X
T104	SLIA4C56	FM Discriminator IFT, Secondary	1	X
T201, 202, 203	RLI2C157	AM IF Transformer, 1st & 2nd	3	X
T204	RLI2C450	AM IF Transformer, 3rd	1	X
T501	SLTA5L15	Power Transformer	1	○ X
CERAMIC FILTERS				
CF1, 101, 102	SVF107MA8A	FM IF Circuit, Red, 10.7MHz	each 3	X
	SVF107MA8B	FM IF Circuit, Blue, 10.67MHz		
	SVF107MA8C	FM IF Circuit, Orange, 10.73MHz		
	SVF107MA8D	FM IF Circuit, Black, 10.64MHz		
	SVF107MA8E	FM IF Circuit, White, 10.76MHz		
RESISTORS				
R116, 121	ERD18TJ820	82Ω, 1/8W, ± 5%, Carbon	2	○ Y
R107, 122	ERD14TJ100	10Ω, 1/4W, ± 5%, Carbon	2	Y
R504	ERD14TJ120	12Ω, 1/4W, ± 5%, Carbon	1	Y
R4, 132, 206, 213	ERD14TJ101	100Ω, 1/4W, ± 5%, Carbon	4	Y
R128, 304	ERD14TJ151	150Ω, 1/4W, ± 5%, Carbon	2	Y
R131	ERD14TJ181	180Ω, 1/4W, ± 5%, Carbon	1	Y
R203	ERD14TJ221	220Ω, 1/4W, ± 5%, Carbon	1	Y
R415, 416	ERD14TJ271	270Ω, 1/4W, ± 5%, Carbon	2	Y
R120	ERD14TJ331	330Ω, 1/4W, ± 5%, Carbon	1	Y
R11	ERD14VJ331	330Ω, 1/4W, ± 5%, Carbon	1	Y
R10, 106, 204	ERD14TJ471	470Ω, 1/4W, ± 5%, Carbon	3	Y
R108, 113, 411, 412	ERD14TJ561	560Ω, 1/4W, ± 5%, Carbon	4	Y
R103	ERD14TJ681	680Ω, 1/4W, ± 5%, Carbon	1	Y
R101, 104, 105, 117, 118, 125, 301, 303	ERD14TJ102	1kΩ, 1/4W, ± 5%, Carbon	8	Y
R12	ERD14VJ102	1kΩ, 1/4W, ± 5%, Carbon	1	Y
R503	ERD14TJ122	1.2kΩ, 1/4W, ± 5%, Carbon	1	Y
R201	ERD14TJ222	2.2kΩ, 1/4W, ± 5%, Carbon	1	Y
R9	ERD14VJ222	2.2kΩ, 1/4W, ± 5%, Carbon	1	Y
R123, 205	ERD14TJ272	2.7kΩ, 1/4W, ± 5%, Carbon	2	Y
R109, 111, 119, 202	ERD14TJ332	3.3kΩ, 1/4W, ± 5%, Carbon	4	Y
R209, 413, 414	ERD14TJ392	3.9kΩ, 1/4W, ± 5%, Carbon	3	Y
R115, 127, 307, 308, 309, 310	ERD14TJ472	4.7kΩ, 1/4W, ± 5%, Carbon	6	Y
R208, 419, 420	ERD14TJ562	5.6kΩ, 1/4W, ± 5%, Carbon	3	Y
R110	ERD14TJ682	6.8kΩ, 1/4W, ± 5%, Carbon	1	Y
R102, 305, 306	ERD14TJ822	8.2kΩ, 1/4W, ± 5%, Carbon	3	Y
R124, 130, 133, 207, 210, 403, 404, 405, 406, 407, 408, 417, 418	ERD14TJ103	10kΩ, 1/4W, ± 5%, Carbon	13	Y
R6, 112, 302	ERD14TJ183	18kΩ, 1/4W, ± 5%, Carbon	3	Y
R8	ERD14TJ223	22kΩ, 1/4W, ± 5%, Carbon	1	Y
R129	ERD14TJ273	27kΩ, 1/4W, ± 5%, Carbon	1	Y
R114	ERD14TJ393	39kΩ, 1/4W, ± 5%, Carbon	1	Y
R7	ERD14VJ393	39kΩ, 1/4W, ± 5%, Carbon	1	Y
R5	ERD14VJ823	82kΩ, 1/4W, ± 5%, Carbon	1	Y
R2, 3, 211, 311, 312, 401, 402, 409, 410	ERD14TJ104	100kΩ, 1/4W, ± 5%, Carbon	9	Y
R1	ERD14VJ184	180kΩ, 1/4W, ± 5%, Carbon	1	Y
R212	ERD14TJ184	180kΩ, 1/4W, ± 5%, Carbon	1	Y
R213	ERD14TJ224	220kΩ, 1/4W, ± 5%, Carbon	1	Y
R126	ERD14TJ564	560kΩ, 1/4W, ± 5%, Carbon	1	Y
R313	ERD14TJ824	820kΩ, 1/4W, ± 5%, Carbon	1	Y
R501, 502	ERD12TJ470	47Ω, 1/2W, ± 5%, Carbon	2	Y
R505	ERC12GK335Z	3.3MΩ, 1/2W, ±10%, Solid	1	Y
VARIABLE RESISTORS				
VR101	EVLS3AA00B24	20kΩ(B), FM Signal Meter Adj.	1	X
VR102	EVLS3AA00B54	50kΩ(B), Muting Level Adj.	1	X
VR301, 401	EVLS3AA00B14	10kΩ(B), VCO & Separation Adj.	2	X
VR402, 403	EWFNVAF30A14	10kΩ(A), Output Level Control	1	○ X
CAPACITORS				
C2, 3, 4, 5, 15, 18, 19, 20	ECKD1H102PF	0.001μF, 50WV, $^{+100}_{0}$%, Ceramic	8	Z
C203, 204	ECKE1H103MD	0.01μF, 50WV, ±20%, Ceramic	2	Z
C21, 135, 140, 141, 208, 213	ECKE1H223PF	0.022μF, 50WV, $^{+100}_{0}$%, Ceramic	6	Z
C506	ECKDAL103PE	0.01μF, 150VAC, $^{+100}_{0}$%, Ceramic	1	Z
C10	ECCD1H010CC	1pF, 50WV, ±0.25pF, Ceramic	1	Z
C201	ECCD1H050CC	5pF, 50WV, ±0.25pF, Ceramic	1	Z
C7, 8, 120	ECCD1H100KC	10pF, 50WV, ±10%, Ceramic	3	Z
C1, 202	ECCD1H120KC	12pF, 50WV, ±10%, Ceramic	2	Z
C11	ECCD1H120KT	12pF, 50WV, ±10%, Ceramic	1	Z
C6, 9, 12, 16, 121	ECCD1H150KC	15pF, 50WV, ±10%, Ceramic	5	Z
C117	ECCD1H220KC	22pF, 50WV, ±10%, Ceramic	1	Z
C206	ECCD1H330KC	33pF, 50WV, ±10%, Ceramic	1	Z
C13	ECCD1H390KC	39pF, 50WV, ±10%, Ceramic	1	Z
C406, 407	ECCD1H470KC	47pF, 50WV, ±10%, Ceramic	2	Z
C112	ECCD1H470KR	47pF, 50WV, ±10%, Ceramic	1	Z
C102, 108, 114, 115	ECCD1H101K	100pF, 50WV, ±10%, Ceramic	4	Z
C14	ECCD1H181K	180pF, 50WV, ±10%, Ceramic	1	Z
C122, 123	ECQM05102KZ	0.001μF, 50WV, ±10%, Polyester	2	Z
C307, 308	ECQM05123JZ	0.012μF, 50WV, ± 5%, Polyester	2	Z
C104, 106, 107, 119, 130, 131, 309	ECQM05153KZ	0.015μF, 50WV, ±10%, Polyester	7	Z
C101, 103, 110, 118, 126, 129, 134	ECQM05223KZ	0.022μF, 50WV, ±10%, Polyester	7	Z
C210	ECQM05393KZ	0.039μF, 50WV, ±10%, Polyester	1	Z
C105, 207, 302	ECQM05473KZ	0.047μF, 50WV, ±10%, Polyester	3	Z
C211	ECQM05683KZ	0.068μF, 50WV, ±10%, Polyester	1	Z
C205	ECQS1361JZ	360pF, 125WV, ± 5%, Styrol	1	Z
C303	ECQS1471JZK	470pF, 125WV, ± 5%, Styrol	1	Z
C214	ECAG25ER1X	0.1μF, 25WV, Electrolytic	1	Y
C305, 306	ECAG25ER33X	0.33μF, 25WV, Electrolytic	2	Y
C304	ECAG25ER47X	0.47μF, 25WV, Electrolytic	1	Y

Ref. No.	Part No.	Description	Per Set (Pcs.)	Remarks
C127, 404, 405	ECEA6V100	100μF, 6.3WV, Electrolytic	3	Y
C133, 216	ECEA16V10	10μF, 16WV, Electrolytic	2	Y
C128, 215, 312	ECEA16V100	100μF, 16WV, Electrolytic	3	Y
C212, 505	ECEA16V220	220μF, 16WV, Electrolytic	2	Y
C504	ECEA16V470	470μF, 16WV, Electrolytic	1	Y
C501, 502	ECEA16V1000	1000μF, 16WV, Electrolytic	2	Y
C209	ECEA16N10	10μF, 16WV, Non-Polar Electrolytic	1	○ Y
C116, 125, 301, 310, 311, 408, 409	ECEA25V3R3	3.3μF, 25WV, Electrolytic	7	Y
C113, 132	ECEA25V4R7	4.7μF, 25WV, Electrolytic	2	Y
C503	ECEA25V470	470μF, 25WV, Electrolytic	1	Y
C124	ECSZ25EF2R2	2.2μF, 25WV, Electrolytic	1	Y
C109, 401, 402	ECEA50V1	1μF, 50WV, Electrolytic	3	Y
VARIABLE CAPACITORS				
CV1, 2, 3, 4, 201, 202 (CT201, 202)	ECV6MX34X14G	Tuning Gang, FM & AM (Trimmer, AM ANT & OSC)	1	○ X
CT1, 2, 3	ECV1ZW10P32	Trimmer, FM ANT & DET, 10pF	3	X
CT4	ECV1ZW06P35	Trimmer, FM OSC, 6pF	1	X
LIGHTS and FUSES				
PL1, 2, 3, 4, 5, 6	XAM35K	Dial Lamp	6	X
PL7	XAMR38S150A	FM Stereo Indicator	1	○ X
F1	XBAS1B0302	Fuse, 0.3A	1	X
F502	XBAS1B0502	Fuse, 500mA	1	X
COMPONENT COMBINATIONS				
Z101	EXA5DL04C	FM Discriminator Circuit	1	Y
Z201	EXAF203Z471	AM Detector Circuit	1	Y
Z501	RXAF103P22HD	Rectifier, Noise Canceler	1	Y
SWITCHES				
S1	SSRA59	Selector Switch	1	○ X
S2, 3	SSLA25S	Muting & High Blend Switch	2	○ X
S4	SSLA27S	Power Source Switch	1	○ X
S5	.....	Voltage Selector Switch, Refer to Ref. No. CA28		
CABINET PARTS				
CA1	SBLA3	Knob, Lever Switch	3	X
CA2	SBNA116E	Knob, Band Selector & Output Level Control	2	○ X
CA3	SBNA117SE	Knob, Tuning (With M'tg. Screw)	1	○ X
CA4	XTV3+8CK	Black Screw, Front Panel M'tg.	4	Z
CA5	XSS3+6S	Screw, Metal Fitting M'tg.	2	Z
	→SYWT3200X1	Front Panel, Complete	1	○ Y
CA6	SGWA1250	Panel, Indicator (Order SYWT3200X1)	(1)	
CA7	SGXA58	Mounting, Glass Plate	2	○ Z
CA8	SHRA606-1	Bracket, Power Switch	1	Z
CA9	SHRA609	Bracket, Muting & Hi-Blend Switch	1	Z
CA10	SGUA20	Glass Plate, Dial	1	○ Y
CA11	SULA51S	Mounting, Glass Plate, Left Side	1	○ Z
CA12	SHGA620	Rubber Cushion, Glass (½×4pcs.)	2	Z
CA13	SHGA640	Rubber Cushion, Glass Plate	2	○ Z
CA14	SULA52S	Mounting, Glass Plate, Right Side	1	○ Z
CA15	XSB3+8KS	Black Screw, Cabinet M'tg.	2	Z
CA16	XSB4+10KS	Black Screw, Cabinet M'tg.	4	Z
CA17	SKAA701	Cabinet	1	○ Y
	→SYUA81A	Bottom Board, Complete	1	Y
CA18	SHGA929	Leg	4	Z
CA19	SKUA351	Bottom Board Only	1	Z
CA20	XTB4+8BR	Red Screw, Bottom Board M'tg.	5	Z
CA21	SHGA925	Rubber Cap, AM Bar Antenna	1	Z
CA22	SMAA19-1	Metal Fitting, AM Bar Antenna M'tg.	1	Z
CA23	SMAA18	Metal Fitting, AM Bar Antenna M'tg.	1	Z
CA24	SMAA6-2	Band, AM Bar Antenna Mounting	1	Z
	→SYPA222AS	Rear Panel, Complete	1	○ Y
CA25	SGPA371A	Rear Panel Only	1	○ Z
CA26	SJFA4401	Terminal, FM & AM Ext, Antenna	1	Y
CA27	SJFA3602	Terminal, Output	1	Y
CA28	SSRA8	Switch, Voltage Selector (S5)	1	Y
CA29	RHR111	Bushing, AC Cord & AM ANT Lead	2	Z
CA30	SJSA67-1	Socket, FM 75Ω Coaxial	1	○ Y
CA31	SJAA3-1	AC Cord, Power Source	1	Y
CHASSIS PARTS				
CH1	SDHA50	Mounting, Meter & Dial Scale	1	○ Z
CH2	SDUA7	Filter, Stereo Indicator Lamp	1	○ Z
CH3	SSMA26-1	Meter, FM Tuning	1	○ X
CH4	SSMA25-1	Meter, Signal Strength	1	○ X
CH5	SMMA10	Mounting, Meter	1	○ Z
CH6	SUMA8	Mounting, Dial Scale .	1	○ Z
CH7	→SDTA6S	Tuning Shaft, Complete	1	○ Y
	SDXA705S	Flywheel ⎫ Not Available	(1)	
	SDTA6006	Shaft Only ⎬ Order SDTA6S	(1)	
	SDXA305S	Mounting, Shaft ⎭	(1)	
CH8	SKDA440	Scale, Dial	1	○ Y
CH9	SHRA916	Lock Pin, Dial Scale	2	○ Z
CH10	RDR20	Pulley, Dial Cord, Small	3	Z
	RDY34	Shaft, Small Pulley	3	Z
	RNW150-2	Washer, Pulley	4	Z
CH11	RDR23	Pulley, Dial Cord, Large	1	Z
	RDY32	Shaft, Large Pulley	1	Z
CH12	SHGA204	Bracket, Stereo Indicator Lamp	1	Z
CH13	SDUA6	Filter, Dial Light	1	○ Z
CH14	SDHA49	Reflection Paper, Dial Light	1	○ Z
CH15	SMPA51	Lamp House, Dial Light	1	○ Z
CH16	SJSA204-1	Holder, Dial Lamp	1	○ Y
CH17	SDPA5	Pointer, Dial	1	○ Y
CH18	RDZ05-5	Cord, Dial 200cm (78¾")	1roll	Y
CH19	SDDA471S	Drum, Dial Cord	1	○ Y
CH20	SDSA4121	Spring, Dial Cord	1	○ X
	XXAR3H6S	Screw, Drum M'tg.	2	Z
ACCESSORIES				
A1	SSAA1	Cord, FM Antenna	1	Y
A2	RJP16AS	AC Plug	1	Y
A3	RJP17AS	AC Plug	1	Y
A4	SJP2129	Cord, Connector	1	Y
A5	SJSA68-1	Plug, Coaxial (With Bind Band)	1	○ Y
PACKING PARTS				
P1	SPPA16-1	Soft Cover	1	Z
P2	SPSA31	Pad, AM Bar Antenna	1	Z
P3	SPP163	Polyethylene Bag	1	Z
P4	SPSA73	Pad, Left Side	1	Z
P5	SPSA70	Pad, Right Side	1	Z
P6	SPNA260A	Carton Box, Inner	1	○ Z
P7	SPSA30	Pad, Between Inner & Outer Carton	1	Z
P8	SPGA500A	Carton Box, Outer	1	○ Z
P9	→SQFA190	Printed Matter, Complete	1	○ Y
	SQXA5113	Instructions Book(Order SQFA190)	(1)	

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